

LEC 2020 Water Supply Plan – SFWMM

Comparison of Existing (1995) and Future (2020) Condition*

	Existing (1995) Condition	Future (2020) Condition (without Restudy components)
Climate	The 1965 to 1995 climatic record is used for evaluations of the Existing (1995) Condition. Rainfall and potential evapotranspiration are the key climatic inputs. The same climatic record is also used for the evaluation of the Future (2020) Condition and will be used in the evaluation of plan alternatives.	Just as for the Existing (1995) Condition, the 1965 to 1995 climatic record is used to evaluate the Future (2020) Condition. This same climatic record will be used for the evaluation of all plan alternatives. Rainfall and potential evapotranspiration are the key climatic inputs.
Sea Level	For the Existing (1995) Condition, sea level data from six long-term USGS stations are used to generate a historic record to use as sea level boundary conditions for the 1965 to 1995 evaluation period.	For the Future (2020) Condition the same sea level data as for the Existing (1995) Condition is used.
Population and Socio-Economic Conditions	The Existing (1995) Condition reflects actual 1995 population and socio-economic conditions. Population and socio-economic conditions enter into and affect the Existing (1995) Condition analysis largely through their impact on water demands.	<ul style="list-style-type: none"> Projections of 2020 population and socio-economic conditions for all areas are based on the medium range projection developed by the University of Florida, Bureau of Economic and Business Research. This information was modified as appropriate based on submittals from local utilities requested by the District.
Land Use for Lower East Coast and Lake Okeechobee Service Areas	<ul style="list-style-type: none"> For the portions of the Coastal Basins covered by the Water Preserve Area Land Suitability Analysis, land use data updated through 1994 were available and were used for the analysis of the Existing (1995) Condition. For the remaining portions of the Coastal Basins the latest data available were the 1988 land use data developed for the Draft Lower East Coast Regional Water Supply Plan. Land use in the Everglades Agricultural Area represents the estimated conditions in 1990, as estimated for the Draft Lower East Coast Regional Water Supply Plan. Land use conditions in the remainder of the Lake Okeechobee Service Area are accounted for through the evaluations of demands. 	<ul style="list-style-type: none"> For the Coastal Basins for 2020, land use projections were based on future land use maps (2010) from local government comprehensive plans. In the Everglades Agricultural Area land use will be the same as for the Existing (1995) Condition except that the land to be used for stormwater treatment areas will be shifted to that use. Impacts of changes in land use in the remainder of the Lake Okeechobee Service Area are accounted for through the public water supply demand projections.
Natural Area Land Cover (Vegetation)	Recently updated information on vegetation classes and their spatial distribution prepared by the District are used for the natural areas. The updated information includes improved classification of wetland land cover types and generally reflect conditions in the 1990 to 1995 period.	The 2020 vegetation classes and spatial distribution will remain the same as those proposed for the Existing (1995) Condition.
Urban and Agricultural Water Demands	<ul style="list-style-type: none"> For the analysis of the Existing (1995) Condition, historical 1995 data on public water supply wellfield pumpages are used. The same public water supply pumpages are used for each of the 31 years of the analysis. Irrigation demands in the Coastal Basins were based on land use and the daily climatic data for the 31 years of the analysis. Everglades Agricultural Area irrigation demands were based on historic use patterns and daily climatic data for the thirty-one years of the analysis. Demands on Lake Okeechobee by the remainder of the Lake Okeechobee Service Area (other than the Everglades Agricultural Area) including those of the Caloosahatchee and St. Lucie Canal Basins were based on historical records adjusted to reflect growth in demands over time due to development in these basins. The St. Lucie Canal Basin demands include the existing Florida Power and Light reservoir at Indiantown. The Upper East Coast rainfall-runoff-relationship is the same as the runoff-relationship developed during the Indian River Lagoon Feasibility Study. 	<ul style="list-style-type: none"> For all areas, the University of Florida Bureau of Economic and Business Research (BEBR's) medium range projection for population growth is used. This projection was modified as appropriate based on submittals from local utilities requested by the District. Average annual demands are projected for public water supply based on submittals from LEC utilities. Irrigation demands in the Lower East Coast Service Area are based on projected land use and climatic variables. Irrigation demands for the Everglades Agricultural Area reflect the construction of the Stormwater Treatment Areas. Caloosahatchee River Basin demands increase by 25% from the Existing (1995) Condition St. Lucie Canal Basin demands remain the same as the Existing (1995) Condition based on projected land use and include the demand associated with the Florida Power and Light reservoir at Indiantown which will increase up to the existing permitted demand. <p>The Upper East Coast rainfall-runoff relationship will be the same as that used</p>

	Existing (1995) Condition	Future (2020) Condition (without Restudy components)
	<ul style="list-style-type: none"> St Lucie Canal Basin demands associated with the existing (1995) land use include the demand associated with the current Florida Power and Light reservoir at Indiantown. 	in the Existing (1995) Condition.
Physical Facilities & Operations - Lake Okeechobee & Lake Okeechobee Service Area	<p>Existing (1995) water management system and practices including:</p> <ul style="list-style-type: none"> Lake Okeechobee Regulation Schedule Run-25 with: Lake Okeechobee regulatory discharges to Water Conservation Areas first, then to Caloosahatchee & St. Lucie if insufficient conveyance capacity exists through the Everglades Agricultural Area. Also Lake Okeechobee regulatory discharge to Water Conservation Areas allowed if Water Conservation Areas are below their regulation schedules. Lake Okeechobee Supply Side management policy for Lake Okeechobee Service Area water restriction cutbacks Interim Action Plan for reduced stormwater backpumping to Lake Okeechobee from Everglades Agricultural Area No water supply backpumping to Lake Okeechobee from the Everglades Agricultural Area Everglades Agricultural Area Best Management Practices Everglades Agricultural Area Best Management Practices assumed to reduce runoff from Everglades Agricultural Area by ~18% per year Everglades Agricultural Area Best Management Practices assumed to not reduce irrigation requirements from Lake Okeechobee Replacement Water Deliveries per Everglades Forever Act(EFA)/SFWMD Rule Historical Kissimmee River inflows to Lake Okeechobee. 	<p>Four changes are associated with the Everglades Construction Project as mandated by the Everglades Forever Act. They are:</p> <ul style="list-style-type: none"> Stormwater Treatment Areas Northern L-8 water directed to Lake Okeechobee Water quality entering Water Conservation Areas assumed to be that produced by Phase 2 of the Everglades Construction Project An additional 80% of the Everglades Agricultural Area lands previously draining to Lake Okeechobee now drain to the Everglades Protection Area. More information on these components are described in the footnote.¹ <p>Other changes are:</p> <ul style="list-style-type: none"> Lake Okeechobee WSE schedule Kissimmee River Restoration and the Headwaters Revitalization Project, which will change the timing and amount of water flowing from the Kissimmee Basin into Lake Okeechobee.²
Physical Facilities & Operations – Water Conservation Areas, Holey Land Wildlife Management Area and Rotenberger Wildlife Management Area	<p>Existing (1995) water management system and practices including:</p> <ul style="list-style-type: none"> No net outflow from Water Conservation Areas (WCA) if water level is less than minimum operating criteria in canals of Loxahatchee National Wildlife Refuge (WCA-1): 14 ft., WCA-2A: 10.5ft., WCA-3A: 7.5 ft. If water is available from Lake Okeechobee, it may be passed through the WCAs to LECSA. No regulatory releases to tide from Water Conservation Areas C&SF Interim Regulation Schedule for the Loxahatchee National Wildlife Refuge (WCA-1) Current WCA-2A & 3A regulation schedules The topography in WCA-3B is consistent with the most recent USGS survey (USGS Report, December 1995) with the appropriate datum conversion from 1988 NAVD to 1929 NGVD. 	<p>1995 water management system and practices with the following changes:</p> <ul style="list-style-type: none"> No net outflow from Water Conservation Areas if the water level is less than Minimum Level marsh triggers or less than minimum operating criteria in canals of the Loxahatchee National Wildlife Refuge (WCA-1): 14 ft., WCA-2A: 10.5ft., WCA-3A: 7.5ft. Marsh level triggers will be those used in the Draft Lower East Coast Regional Water Supply Plan alternative 5. If water is available from Lake Okeechobee, it may be passed through the WCAs to LECSA. Rainfall driven operational criteria determine timing of deliveries to and discharges from WCA 2A and 3A. The quantity will be adjusted to approximate Best Management Practices Replacement Water Rule volumes. Structural modifications per federally authorized Modified Water Deliveries project³ <p>The topography in WCA-3B will be the same as that used in the Existing (1995) Condition.</p>
Physical Facilities & Operations – Everglades	<p>Existing (1995) water management system and practices including:</p> <ul style="list-style-type: none"> Water deliveries to Everglades National Park are based on the current Experimental Rainfall Delivery Plan for flows to Shark River Slough vis S-12's and S-333 Test 7 Phase 1 Operations of Experimental Program of Water Deliveries to Everglades National Park 	<p>1995 water management system and practices with the following changes:</p> <ul style="list-style-type: none"> The Federally authorized Modified Water Deliveries to Everglades National Park Project using a modified rainfall delivery plan to more closely replicate natural system like conditions consistent with WCA-3A rain-driven operations⁴ <p>Federally authorized C-111 Project for Taylor Slough and East Panhandle.⁴</p>

	Existing (1995) Condition	Future (2020) Condition (without Restudy components)
National Park		
Physical Facilities & Operations – Lower East Coast Service Area	<p>Existing (1995) water management system and practices including:</p> <ul style="list-style-type: none"> Existing C&SF system and operating rules in effect in 1995 Existing secondary drainage/water supply system Existing public water supply wellfields locations utilized Location of Northwest Dade Lake Belt's existing mines included in Land Use information. 	<p>1995 water management system and practices with the following changes:</p> <ul style="list-style-type: none"> LEC utility wellfield locations and distributions based utility preferred locations as submitted to the District in January 1999. Generally, existing wellfields to the east are preferred to building new western wellfields in LEC SA 1 and 2. Broward secondary canal recharge network based on the Interim Plan for Lower East Coast Regional Water Supply document.⁵ Miami-Dade County utility aquifer storage and recovery based on the Interim Plan for Lower East Coast Regional Water Supply.⁶ Selected elements of L-8 project⁷ Northwest Dade Lake Belt area permits for excavation of limerock will be exercised Operational adjustments to try to maintain water levels in coastal canals to meet saltwater intrusion criteria Minimum Levels in the Biscayne Aquifer as proposed in the Interim Plan for Lower East Coast Regional Water Supply and Draft Minimum Flows and Levels documents⁸.
Physical Facilities & Operations – Western Basins and Big Cypress	<p>Existing (1995) water management system and practices including:</p> <ul style="list-style-type: none"> Estimated historical inflows from Western basins Brighton Seminole demands are 28,500 ac-ft on average annually, fluctuating to a maximum of 44,000 ac-ft per year as per the Seminole Compact. 	<p>1995 water management system and practices with the following changes:</p> <ul style="list-style-type: none"> Estimated inflows from Western basins according to Everglades Construction Project Brighton Seminole demands are 28,500 ac-ft on average annually, fluctuating to a maximum of 44,000 ac-ft per year as per the Seminole Compact.
Region-wide Water Management and Related Operations	<ul style="list-style-type: none"> The analysis of the Existing (1995) Condition reflects the existing water shortage policies as reflected in South Florida Water Management District rule 40E-21. The impacts of declarations of water shortages on utility water use reflect assumptions contained in the Draft Lower East Coast Regional Water Supply Plan for the 2010 base case. These are that Phase 1 restrictions result in a 10% decrease in water use, while Phase 2 results in a 25% decrease, Phase 3 a 40% decrease and Phase 4 a 55% decrease. Restrictions are applied to the LECSA(s) affected locally by low ground water levels. Implementation of supply side management in the Lake Okeechobee Service Area to mimic existing District practices as detailed in the District publication <u>Lake Okeechobee Supply-side Management Plan</u>, September 1991. 	<p>The assumptions for the Future (2020) Condition are the same as for the Existing (1995) Condition.</p>

* This table was derived from the revised existing and future base Restudy table titled "C&SF Project Restudy - Existing(1995) and Future (2050) Without Project Condition Summaries"

¹ The components of the Everglades Construction Project are:

- Stormwater Treatment Areas – These 6 areas will cover more than 40,000 acres and will reduce the amount of phosphorus and other constituents in stormwater runoff before it enters the Everglades Protection Area. Associated facilities will improve the distribution of water as it enters the Everglades Protection Area to help recreate sheet flow conditions. Other improvements include enhanced flood protection for the C-51 basin,
- Northern L-8 water directed to Lake Okeechobee – A divide structure in L-8 and a pump station and improved structures at Lake Okeechobee will be used to direct runoff from the northerly part of the L-8 basin (consisting primarily of the Dupuis Reserve and the J.W. Corbett Wildlife Management Area) to Lake Okeechobee.
- Water quality entering Water Conservation Areas assumed to be that produced by Phase 2 of the Everglades Construction Project – The Everglades Forever Act requires that future inflows to the Everglades Protection Area meet future established standards for phosphorus or a default standard of 10 parts per billion. Because it is not certain what the phosphorus standards will be or what will be implemented without the C&SF Project Restudy to achieve those standards, the Future (2020) Condition assumes water entering the Everglades Protection Area will be of the quality produced by the Stormwater Treatment Areas. The alternatives of the C&SF Project Restudy will include as components those additional facilities needed to achieve the best estimate of the future standards.
- Additional Everglades Agricultural Area basins previously draining to Lake Okeechobee now provide 80% of the drainage to the Everglades Protection Area – As part of the requirements of the Everglades Forever Act, much of the water previously discharged to Lake Okeechobee from the East Beach WCD, East Shore WCD, 715 Farms, South Shore WCD and South Florida Conservancy District will be routed to the Stormwater Treatment Areas and the Everglades Protection Area. Some 298 Districts may still backpump to Lake Okeechobee.

² The Kissimmee River Restoration Project will result in the backfilling of 29 miles of the C-38 Canal and the excavation of 11.6 miles of new river channel. This will restore a significant portion of the Kissimmee River and about 29,000 acres of wetlands. To provide the water in the timing and quantities needed for the restoration of the River, the Headwaters Revitalization Project is being undertaken. It includes modifications of the regulation schedules for the Upper Chain of Lakes and associated canal and water control structure modifications. The Headwaters Revitalization Project will also provide ecological benefits within the Upper Chain of Lakes Area. The impact of this project on Lake Okeechobee is that the timing of inflows to Lake Okeechobee will be changed and approximately 1.6% less water will enter the Lake from the Kissimmee River due to additional evapotranspiration upstream.

³ The Modified Water Deliveries to Everglades National Park Project provides structural modifications to enable the restoration of more natural water flows to Shark River Slough in Everglades National Park. Components include structures to improve conveyance from WCA-3A to WCA-3 B and from WCA-3B to Everglades National Park, removal of an existing levee and canal (L-67 Extension) within Everglades National Park, providing flood protection to the Miccosukee Indian Camp and a pump station to return captured seepage water to Shark River Slough.

⁴ The C-111 project consists of structural and non-structural modifications within the C-111 basin, which will improve hydroperiods in Taylor Slough, Shark River Slough and the eastern Panhandle areas of the Everglades. It will maintain the existing level of flood protection within the agricultural areas adjacent to C-111. The C-111 Project Canal operations will be consistent with the authorized levels (aka Base '83).

⁵ This component is to be implemented as a result of the Lower East Coast Interim Plan and includes pump stations and structures which would maintain higher levels in secondary canals in eastern Broward County between the Hillsboro and the North New River Canals during the dry season. The selected canals are located where recharge from the canals would help to hold back the salt water front and protect the production capability of wellfields to the east.

⁶ This component is to be implemented as a result of the approved Lower East Coast Interim Plan and includes ASR wells and related facilities that would be installed associated with wellfields of the Miami Dade Water and Sewer Authority Department. These facilities would be operated to store water in the Floridan Aquifer in the wet season and recover this water in the dry season. For the Future (2050) Without Project Condition the evaluations were for a daily injection and recovery capacity of 150 mgd, a maximum recovery percentage of injected water of 90% an annual injection period of 7 months and an annual recovery period of 5 months.

⁷ This component is to be implemented as a result of the Lower East Coast Interim Plan. It includes a structure to help restore the Loxahatchee Slough and an improved structural connection from the West Palm Beach Water Catchment Area to the Loxahatchee Slough.

⁸ MFL's proposed in July 1998 (1998, SFWMD) modified to reflect new criteria in 6 canals: C-51@S-155 - 7.80; C-16@S-40 - 7.80; C-15@S-41 - 7.80; C-6@S-26 - 2.00; C-4@S-25B - 2.20; C-2@S-22 - 2.20 NGVD.